

REMARKS

Claim 1 has been amended to add structural description to the invention. Applicant submits that neither of the prior art references of record, alone or in combination, teaches the product as now claimed.

Applicant acknowledges that it was known to place a ceramic sleeve on a graphite component for use in a molten metal bath before Applicant's invention. Such a device is described in this Application at, among other places, paragraphs [14] and [15]. The prior art devices are formed by applying cement on a graphite component and then sliding the ceramic sleeve over the component and allowing the cement to dry. Application ¶ [14]. This can lead to voids which can cause component failure. Application ¶¶ [14] and [15].

The present invention differs from the prior art in that, among other things, the protective, outer coating is first placed over the graphite component thereby defining a space between the protective, outer coating and the component. Claim 1; Application ¶ [16]. Cement is then injected into the space between the protective, outer coating and the graphite component. Id.; claim 1. Using this method, it is less likely that there will be gaps, which leads to longer component life. Application ¶ [16]. The claims as now amended further describe the invention as including one or more passages in the non-protected component, such as a graphite shaft, and one or more openings in the protective coating, such as a ceramic sleeve. At least some of the uncured cement is injected through the one or more of the passages and/or the one or more openings.

When reviewing product-by-process claims, the structure implied by the process should be considered when assessing the patentability of product-by-process claims over the prior art . . . especially where the manufacturing process steps would be expected to import distinctive structural characteristics. TMEP § 2113. Here, Applicant's amended claims define a structure that is not disclosed in the prior art. For example, the passage(s) and/or opening(s) are not described in the prior art and allow for uncured cement to efficiently be injected into essentially the entire space between the unprotected component and the protective coating.

U.S. Patent No. 6,371,723B1 to Grant et al. teaches a shaft system 100 that includes a shaft coupler 104 and an outer sleeve shaft 103. Col. 5, ll. 38-41. The shaft coupler is placed over a graphite shaft and the shaft sleeve is placed over the shaft coupler. Col. 6, ll. 19-29.

Cement is then applied to approximately ½ inch of each end of the shaft and the combined shaft, shaft coupler and shaft sleeve are heated to approximately 800°F. Col. 6, ll. 29-34. This causes the shaft coupler to expand and secure the shaft sleeve to the shaft. Col. 6, ll. 34-36. The resulting product would not have cement substantially (and preferably entirely) filling the gap between the graphite component and the outer coating. Nor does Grant teach, among other things, (a) a non-protected component, such as a graphite shaft, that has one or more passages through which uncured cement can be injected, and/or (b) a protective coating, such as a ceramic sleeve, that has one or more openings through which uncured cement can be injected.

U.S. Patent No. 6,168,753B1 to Morando teaches a graphite leg surrounded by a ceramic sleeve 34, which is adhered to the graphite leg utilizing cement. Col. 2, ll. 33-39; ll. 49-58. Morando also does not teach a product made by the process of the current invention and is presumed to be made utilizing the known process of first applying uncured cement to the graphite component. Morando does not teach, among other things, (a) a non-protected component, such as a graphite shaft, that has one or more passages through which uncured cement can be injected, and/or (b) a protective coating, such as a ceramic sleeve, that has one or more openings through which uncured cement can be injected.

CONCLUSION

Reconsideration is respectfully requested. Applicant believes the case is in condition for allowance and respectfully requests withdrawal of the objections and rejections and allowance of the pending claims.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to **Deposit Account No. 19-3878**.

The Examiner is invited to telephone the undersigned at the telephone number listed below if it would in any way advance prosecution of this case.

Respectfully submitted,

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Date

By David E. Rogers
David E. Rogers
Reg. No. 38,287

SQUIRE, SANDERS & DEMPSEY, LLP.
Two Renaissance Square
40 North Central Ave., Suite 2700
Phoenix, Arizona 85004
Telephone: (602) 528-4122
Facsimile: (602) 253-8129

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